

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

HANS PETER WEITZEL et al.

Serial No.: 10/596,266

Filed: June 7, 2006

For: USE OF BIOCIDES-CONTAINING, WATER-REDISPERSIBLE POLYMER  
POWDER COMPOSITIONS IN MINERAL CONSTRUCTION MATERIALS

Attorney Docket No.: WAS 0768 PUSA

Group Art Unit: 1796

Examiner: Alexander C. Kollias

**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
U.S. Patent & Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is an Appeal Brief from the final rejection of claims 34 - 51 of the Office Action mailed on December 3, 2009 for the above-identified patent application.

**I. REAL PARTY IN INTEREST**

The real party in interest is Wacker Chemie AG ("Assignee"), a corporation organized and existing under the laws of Germany, and having a place of business at Hanns-Seidel-Platz 4, Munich, Germany 81737, as set forth in the assignment recorded in the U.S. Patent and Trademark Office on October 1, 2008 at Reel 021603/Frame 0608.

## **II. RELATED APPEALS AND INTERFERENCES**

There are no appeals, interferences or judicial proceedings known to the Appellant, the Appellant's legal representative, or the Assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## **III. STATUS OF CLAIMS**

Claims 34 - 51 are pending in this application. Claims 34 - 51 have been rejected and are the subject of this appeal. Claims 1 - 33 have been cancelled.

## **IV. STATUS OF AMENDMENTS**

An amendment after final rejection was filed on January 28, 2010, and has been accepted for entry .

## **V. SUMMARY OF CLAIMED SUBJECT MATTER**

The subject matter of claim 49 is a curable mineral construction product containing a water-redispersible polymer powder composition which contains a water-redispersible polymer powder and at least one biocidal additive (page 2, lines 19 - 23; page 10, line 21 to page 11, line 5; Examples; claim 1 as filed) selected from the group consisting of bactericide actives, fungicide actives, and algicide actives (page 2, line 31 to page 3, line 19), in an amount of 0.0001 to 0.5 percent by weight based on the weight of the composition (page 15, lines 1 - 3).

The subject matter of claim 43 is directed to a process for increasing resistance of a cured mineral building product to microbial growth (page 2, lines 19 - 23; claim 1 as filed) by adding to a curable mineral building product composition, a water dispersible polymer powder composition containing at least one spray dried water redispersible polymer powder (page 8, line 38 to page 11, line 5; Examples) admixed with at least one solid biocidally active consisting of

bactericide actives, fungicide actives, or algicide actives (page 2, line 31 to page 3, line 19; page 10, lines 16 - 19; claim 8 as filed).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- A. Claim 48 stands rejected under 35 U.S.C. § 112 ¶1.
- B. Claims 49 and 34 - 42 stand rejected under 35 U.S.C. § 102(b) as anticipated by Weitzel et al. Published Application No. 2003/0018121 ("*Weitzel*").
- C. Claim 50 stands rejected under 35 U.S.C. § 103(a) over *Weitzel*.
- D. Claims 34, 44, 47 - 48, and 51 stand rejected under 35 U.S.C. § 103(a) over *Weitzel* in view of *Botts* U.S. Patent No. 7,070,795 ("*Botts*").
- E. Claims 49, 34 - 35, and 37 - 46 stand rejected for obviousness-type double patenting over Weitzel et al. U.S. patent 6,740,692 ("*Weitzel-P*").

## **VII. ARGUMENT**

The subject invention is directed to a process for rendering cured building materials such as cements, mortars, plasters, renders, etc., less subject to microbial attack (claim 43), and to curable compositions suitable for use in this process (claim 49). In many applications of curable mineral products, such as building facades and bathrooms, microbial growth under wet conditions causes discoloration, which is undesirable. In the past, as explained in the specification, biocidal actives such as the isothiazolinones, have been added to the mortar, stucco, or the like during mixing on site. Large amounts of biocidal actives are required, and even then, the degree of protection is often less than desired.

*Weitzel* and *Weitzel-P* (*Weitzel* being the patent issuing from *Weitzel*)<sup>1</sup> teaches to avoid incorporating biocidal actives, and instead incorporated cyclodextrin complexes of the actives. The *Weitzel* application is discussed in the present application as WP 10105 on page 2, lines 16 and 17.

Appellants have surprisingly and unexpectedly discovered that the biocidal actives themselves may be incorporated into mineral building products at relatively low concentration and with high biocidal effectiveness if they are mixed with a redispersible polymer powder to form a redispersible polymer powder composition. The preferred method of incorporating the biocides into the redispersible polymer powder composition is to add the actives (neat biocides) to the aqueous polymer dispersion prior to spray drying, and spray drying to form the powdery composition which now has the biocide incorporated therein.<sup>2</sup> In the Examples and Comparative Examples, the redispersible biocide-containing compositions were much more effective than the biocide itself, even when the latter is used in a much large proportion.

For example, the renders of all the examples contained 30 parts by weight of dispersion powder. In Comparative Example 3, the dispersion powder contained no biocide and no biocide was added separately. Microbial growth was observed after 6 months and continued to increase over time. Comparative Example 4 contained 225 ppm biocide, and showed microbial growth after 9 months. In comparison, the subject invention Examples 1 and 2 incorporated the biocide into the redispersible polymer powder to form a biocide-containing redispersible polymer powder composition. When added at 30 parts of redispersible powder to

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<sup>1</sup> Citations to *Weitzel* and *Wietzel-P* herein are to *Weitzel-P*, since the disclosures are identical, *Weitzel-P* being the patent issuing from *Weitzel*.

<sup>2</sup> As is well known, redispersible powders are a special category of polymer powders prepared by spray drying an aqueous dispersion of polymer with a protective colloid. When added to water, redispersible powders redisperse to a dispersion with the same particle size and particle size distribution as the aqueous dispersion from which they were prepared, contrary to other powders of the same composition.

the render as in the other examples, the render contained 22.5 ppm and 10.5 ppm of the biocide active, *i.e.* one tenth and one twentieth the amount of Comparative Example 4. Despite containing this extremely small amount of biocide, the render showed no microbial growth after 12 months, *i.e.* one twentieth (0.05) of biocide was more effective than twenty times this amount, a truly surprising and unexpected result. This result is confirmed with several different redispersible polymer powders in the Declaration of Dr. Weitzel, which is of record and which is cited in the evidence appendix.

**A. Rejection of Claim 48 Under 35 U.S.C. § 112 ¶1**

Claim 48 continues to be rejected for lack of description, and Appellants still continue to be unable to understand why. The relevant phrase is "incorporated [the biocide] into the water redispersible powder composition by spray drying an aqueous polymer dispersion and a biocide," as used in the Examples. WEBSTERS SEVENTH NEW COLLEGIATE DICTIONARY (and many others) define "incorporate" as "to unite thoroughly with or work indistinguishably into something already existent" and "to blend or combine thoroughly to form a consistent whole." That is exactly what is done in the Examples, and explained in detail in the specification. Note pages 8 - 10. The specification and claims are addressed to one skilled in the art, who has no difficulty understanding this term. It is so well established so as to take judicial notice thereof that a claim limitation does not have to be present in *haec verba*. The claim does not, as the Office states, mean that "the biocide is incorporated into the polymer, *i.e.* the biocide is embedded, encapsulated, found within the polymer matrix, etc." The claim states that the biocide is incorporated into the redispersible polymer powder composition, and "composition" is defined in claim 47 from which claim 48 depends, as "comprising at least one film forming redispersible polymer powder ("RDP") and a biocidal additive of at least one biocide." This definition does not indicate that the biocide is part of the polymer matrix, or is encapsulated, etc. The compositions of the inventive examples comprise an RDP and a biocide, produced by spray drying. The resulting redispersible polymer powder composition contains, *i.e.* has "incorporated

into" it, a biocide. There is full written description for the term "incorporated into", and reversal of the rejection of claim 43 and 35 U.S.C. § 112 ¶1 is respectfully solicited.

**B. Rejection of Claims 49 and 34 - 42 over *Weitzel* Under 35 U.S.C. § 102(b).**

The claims and specification are interpreted by one skilled in the art. During examination, the claims are given their broadest reasonable interpretation, but the emphasis here is on "reasonable." The Courts have held that with respect to what is reasonable, "claim language must be read in light of the specification as it would be interpreted by one of ordinary skill in the art," *In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990), citing *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 2d 385, 388 (Fed. Cir. 1983). See also *In re Suitco Surface, Inc.*, Slip Opinion 2009 - 1418 (Reexamination No. 90/007,015) (Fed. Cir. April 14, 2010).

Claim 49 is presented below:

A curable mineral construction product comprising a water-redispersible polymer powder composition, said redispersible polymer powder composition comprising a water redispersible polymer powder and at least one biocidal additive selected from the group consisting of bactericide active(s), fungicide active(s), and algicide active(s), the biologically active additive being present in the water redispersible polymer powder composition in an amount of 0.001 to 0.5 percent by weight based on the weight of the water redispersible polymer powder composition.

The clear claim language requires the biocidal additive to be "selected from the group consisting of bactericide active(s), fungicide active(s), and algicide active(s)." The terms "active" or "active compound" are words of art in the biocide field which pertain to the biocidal compound itself, *i.e.* neat. A composition containing 50% filler and 50% biocide is not an "active". It contains only 50% actives, *i.e.* 50% of the biocide.



*Weitzel* is directed to the goals of incorporating biocides and photoinitiators into mineral building products to prevent soiling. *Weitzel* discloses that prior art methods of direct incorporation are not desirable, and proposes to avoid these problems by addition of the "active", *i.e.* the photoinitiator compound or biocide compound, into the building product in the form of a cyclodextrin complex. See Table 1 for the composition used in the Examples. Note, in particular, Example 6, which used a cyclodextrin complex of n-octylisothiazolinone ("OIT") which is also used in Appellants' examples. In Comparative Example C8, uncomplexed OIT was added directly to the building product composition by mixing. At the same concentration of active (0.1% = 1000 ppm), the soiling of the cured coating after 15 months of weathering was less than when the active was used alone. Similar results were achieved in Example 9 and Comparative Example C10, using a different biocide, complexed within cyclodextrin in Example 9, and added neat in Example C10.

The position of the Office is that the term "biocidal active" and like terms: "bactericide active(s)", "fungicide active(s)", and "algicide active(s)" would include the cyclodextrin/biocide complexes of *Weitzel*. However, such an interpretation is not only contrary to how one skilled in the field of biocides views this term, but is also contrary to how one skilled in the art would interpret this term in light of the specification, per *Bond*, *Sneed*, and *Suitco*. Any such interpretation is unreasonable. One need only to go to their local hardware store, Lowes, or Home Depot, and observe the label of any biocidal or herbicidal product. One will find listed "Active Ingredients," following which will be listed the biocidal actives, generally in small amounts, followed by "inert ingredients", which include water, solvent, emulsifiers, stabilizers, complexing agents, etc. One would never say that a bottle of Weed-B-Gon® is an "active." It contains only a very small amount of actives, less than 1%. The same reasoning applies to cyclodextrin complexes of actives. The complex itself is not the active. The active is what is complexed within the cyclodextrin. This is how one skilled in the art views the term "biocidal active." The claims indicate that the biocidal; active "consists of" bacteriocidal, fungicidal, or algaecidal actives. "Consists of" is a closed phrase which prohibits inclusion of other substances.

Thus it is clear that the claims do not include biocide cyclodextrin complexes as the presence of cyclodextrin is precluded by the "consists of" language.

Moreover, the claim terms must be read by one skilled in the art in light of the specification. The *Weitzel* application is referenced as prior art on page 2 of the application: "WP 10105 discloses coating compositions containing fungicides as complexes with cyclodextrin." One skilled in the art, reading the specification and recognizing that the Appellants cited biocide cyclodextrin complexes as prior art would never construe the claims to include such complexes. That is not a reasonable interpretation of the specification.

*Weitzel* teaches against using uncomplexed biocides, and discloses no biocide-containing polymer powder composition at all. *Weitzel* never discloses mixing of any biocidal additive, whether the active alone, or a cyclodextrin complex of the active, with the redispersible polymer powder to produce a water redispersible polymer powder composition. The only mixing disclosed may be found at column 7, line 66 to column 8, line 10. No redispersible polymer powder composition containing biocide is disclosed. Instead, all the ingredients, separately, are added to the coating formulation, *i.e.* mixed at the construction site.

A rejection for lack of novelty under 35 U.S.C. § 102(b) requires strict identity. See, *e.g.* *Trintec Industries, Inc. v. TOP - U.S.A. Corp.*, 295 F.3d 1292 (Fed. Cir. 2002). Here, there is no such strict identity. Not only does *Weitzel* not disclose the preparation and/or use of any water redispersible polymer powder composition containing neat biocide, he also does not disclose any mixture of a redispersible polymer powder with even his cyclodextrin complexed biocides.

Reversal of the rejection of the claims under 35 U.S.C. § 102(b) over *Weitzel* is respectfully requested.



**B. Rejection of Claim 50 over *Weitzel* under 35 U.S.C. 103(a).**

Claim 50 is dependent from claim 49, and reads as follows:

The curable mineral construction product of claim 49, wherein the polymer of the redispersible polymer powder is a vinyl acetate, vinyl versatate and ethylene copolymer, and the biocide is a solid biocide consisting of N-octylisothiazolinone.

*Weitzel* discloses the use of n-octylisothiazolinone (Example 6, Comparative Example 8), which is a solid, but teaches that the biocide must be complexed with cyclodextrin, thus teaching away from uncomplexed biocides. Claim 49 from which claim 50 depends, requires the biocidal additive to be selected from the group consisting of bacteriocidal, fungicidal, and algaecidal actives. A cyclodextrin complex of an active is not an active. It contains an ingredient, cyclodextrin, which is not permitted by the "consisting of" language of the Markush group. *Weitzel* teaches away from the use of non-complexed additives, including such in their comparative examples. At column 7, lines 5 - 7<sup>3</sup>, *Weitzel* indicates that "[i]n the coating compositions of the invention, the photoinitiator b) and/or fungicide b) are each present in the form of a cyclodextrin complex." *Weitzel* teaches away. Teaching away is strong evidence of non-obviousness. *W.L. Gore v. Garlock*, 721 F.2d 1540 (Fed. Cir. 1983).

Reversal of the rejection of claim 50 under 35 U.S.C. § 103(a) is respectfully solicited.

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<sup>3</sup> References to *Weitzel* and *Weitzel-P* are from *Weitzel-P*. The disclosures are identical.

**D. Rejection of Claims 34, 44, 47 - 48 Under 35 U.S.C. § 103(a)  
Over *Weitzel* in view of *Botts*.**

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The teachings of *Weitzel* have been discussed previously. *Weitzel*, to the extent it is related to use of biocides, requires the biocides to be in the form of a cyclodextrin complex.

*Botts* requires the agricultural active ingredients (note the use of the term "active" by *Botts*, consistent with Appellants use of this term) entrapped in a polymer matrix. After being so entrapped, the biocide can only be released by slow diffusion through the polymer matrix. In *Weitzel*, the biocide is simply released by exiting the cyclodextrin host cavity. Diffusion is not relevant. The modes of operation are totally different.

It is impossible to reconcile *Botts*' teachings with those of *Weitzel*. In the sections of *Botts* cited by the Office, *Botts* teaches preparation of compositions which contain a biocide uniformly distributed within a polymer matrix. These are not CD complexes, nor are they in any way similar to Appellants' redispersible polymer compositions. Moreover, the spray drying technique of *Botts* and that of Appellants are very different. *Botts* teaches dissolving polymer and biocide in hydrophobic organic solvent to form a solution, emulsifying the solution into droplets in an aqueous or hydrophilic phase, and then spray drying. As a result, polymer beads containing biocide uniformly dispersed therein are formed. This is not Appellants' process.

In Appellants' process, a dispersion of solid polymer particles and biocide are spray dried. See Examples 1 and 2. Because the polymer is in solid form already, the biocide cannot be uniformly dispersed within the particles. Moreover, the polymer particles of *Botts*, by definition, are not redispersible. To be a redispersible polymer powder, the polymer must exist in solid particulate form prior to spray drying, as is well known. In the *Botts* process, the polymer is not in solid form, but in dissolved form. Thus, no redispersible polymer composition can be produced. Note that *Botts* does not employ any protective colloid, necessary to form a redispersible polymer powder.

Even if *Botts* taught a redispersible polymer composition, which he does not, there would be no motivation to combine *Botts* with *Weitzel*, because *Weitzel* teaches cyclodextrin biocide complexes, not biocides uniformly dispersed in polymer beads. These contrasting teachings cannot be reconciled. Reversal of the rejection of the claims over *Weitzel* in view of *Botts* is respectfully solicited.

In the Advisory Action, the Office states that:

Applicant argues the combination of references, Weitzel in view of Botts by arguing that the spray drying technique disclosed in Botts is different from that utilized in the present invention. However, firstly is noted that the claim 47 drawn to the process of forming the presently claimed composition merely recited admixing the ingredients while claim 48 which depends from 47 recites that the biocide, isothiazolinone or benzimidazole, is incorporated into the water redispersible polymer composition by spray drying". The claims do not recite that the redispersible polymer must be in solid particulate form prior to spray drying, but merely require incorporation of the biocide into the polymer by spray drying.

It is correct that claim 47 only requires "mixing." However, it requires mixing of the biocide with a redispersible polymer powder, a less preferred embodiment of the present invention. Mixing cannot incorporate the biocide into the polymer matrix of the redispersible polymer powder, as required by *Botts*, and a redispersible polymer powder is in the form of solid particles, by definition, both prior to and after spray drying or mixing.

Claim 48, dependent on claim 47, requires that the aqueous polymer dispersion and the biocide are spray dried. A dispersion, by definition, is composed of a solid, dispersed phase, here, the solid polymer particles and solid biocide particles. If the polymer were a liquid, it would be an emulsion, not a dispersion. Moreover, an emulsion of liquid polymer cannot be spray dried to form a water redispersible polymer, by definition. "Spray drying" of an emulsion

of liquid particles would remove the continuous phase, creating a liquid polymer, not a polymer powder, and certainly not a redispersible polymer powder. The Examiner treats these limitations as not being in the claims, but they are. The term "redispersible polymer powder" ("RDP") is a term of art which is well known. Redispersible polymer powders have been available on the market since the 1950's at least, and consist of solid polymer particles protected from coalescence (film formation) by the presence of a protective colloid. RDPs are formed by drying, preferably spray drying, an aqueous dispersion of solid polymer particles of very fine size produced by emulsion polymerization. During emulsion polymerization, the liquid monomers are converted to solid polymer particles by polymerization, as is well known, and which has been practiced for decades. The dispersion of solid particles which results is dried in the presence of a protective colloid to form the RDP, which can then be redispersed in water by simple stirring to produce a dispersion having the same particle size and particle size distribution as the particles in the aqueous dispersion had prior to drying. These characteristics of RDPs have been known for decades, and are so well known that judicial notice may be taken thereof.

The process of *Botts* spray dries a solution of solid polymer, not a dispersion, and because the biocide is also dissolved in the organic solvent, spray drying, which removes the solvent, produces polymer particles having biocide dispersed, usually dissolved, in the polymer matrix.<sup>4</sup> This cannot be done in Appellants' process because the polymer is already in the form of solid particles in the aqueous dispersion prior to spray drying, and there is no organic solvent. *Botts* teaches away from the claimed invention. The redispersible polymer powder composition of Appellants, when added to water (for example in the preparation of a mortar, stucco, or architectural coating), will produce a dispersion of polymer particles and biocide particles, not a dispersion of polymer particles having a biocide in the polymer matrix as required by *Botts*.

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<sup>4</sup> Prior to spray drying, polymer particles did not exist: only droplets of polymer in solution in solvent. No protective colloid or emulsifier, necessary to form an RDP is used. The solid particles are not RDPs.

Reversal of the rejection of the claims over *Weitzel* in view of *Botts* is respectfully solicited.

**E. Obviousness-Type Double Patenting Over *Weitzel-P***

Claims 49, 34 - 35, and 37 - 46 have been rejected for obviousness-type double patenting over *Weitzel-P*. For the reasons discussed previously with regard to *Weitzel* and *Weitzel-P*, this rejection is untenable.

*Weitzel-P* requires that the biocide be incorporated in a cyclodextrin complex and makes no mention of a biocide-containing redispersible polymer powder composition. One could practice the invention of *Weitzel-P* without infringing the claims of the present application, and *vice versa*. The two applications/patents are mutually distinct.

*Weitzel-P* does not teach or suggest the claimed invention, but teaches away. *Weitzel-P* teaches against the use of uncomplexed biocides, and requires that his fungicides be present in the form of a biocide/cyclodextrin complex. In Appellants' invention, the biocides are not complexed, but are supplied in the form of the neat actives themselves to the redispersible polymer powder composition. *Weitzel-P* teaches against such use.

The allowance of the claims of the present application would not extend the life of the *Weitzel-P* patent because the claimed subject matter of *Weitzel-P* is distinct from the claimed subject matter of the present application. Moreover, the claimed subject matter is not rendered obvious by *Weitzel-P* under 35 U.S.C. § 103(a)<sup>5</sup> because *Weitzel-P* teaches away from the claimed subject matter by requiring cyclodextrin complexed actives rather than the actives

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<sup>5</sup> In the Office Action of December 3, 2009, a separate rejection for obviousness under 35 U.S.C. § 103(a) over *Weitzel-P* was made. However, as this rejection was not mentioned in the Advisory Action, it is believed to have been withdrawn. If Appellants are incorrect, the above arguments are noted and reversal of the rejection is respectfully solicited.

*per se.* *Weitzel-P* does not teach or suggest preparing a composition containing a water redispersible polymer powder and an uncomplexed cyclodextrin, and in fact does not even teach the preparation of a water redispersible composition containing a redispersible polymer powder and his cyclodextrin complexed cyclodextrin.

Reversal of all rejections of record is respectfully solicited.

The fee of \$540.00 as applicable under the provisions of 37 C.F.R. § 41.20(b)(2) is being charged to Deposit Account No. 02-3978 via electronic authorization submitted concurrently herewith. The Commissioner is hereby authorized to charge any fees or credit any overpayments as a result of the filing of this paper to Deposit Account No. 02-3978.

Respectfully submitted,

**HANS PETER WEITZEL et al.**

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Enclosure - Appendices



### **VIII. CLAIMS APPENDIX**

1 - 33. (Cancelled).

34. The curable mineral construction product of claim 49, wherein the water redispersible polymer powder composition is prepared by spray drying an aqueous polymer dispersion together with said biocide.

35. The curable mineral construction product of claim 49, wherein the water redispersible polymer powder composition is prepared by spray drying an aqueous polymer dispersion to form a water redispersible polymer powder, and the biocide is admixed in solid form with the water redispersible polymer powder to form a water redispersible polymer powder composition.

36. The curable mineral construction product of claim 49, which contains a hydraulically settable mineral binder.

37. The curable mineral construction product of claim 49 which is a cement-free product.

38. The curable mineral construction product of claim 49, wherein the biocide consists of at least one of an isothiazolinone or a benzimidazole.

39. The curable mineral construction product of claim 49, wherein the biocide consists of one or more biocides selected from the group consisting of N-octylisothiazolinone, dichloro-N-octylisothiazolinone, chloromethylisothiazolinone, methylisothiazolinone, benzisothiazolinone, 2-(methoxycarbonylamino)benzimidazole, 2,4-diamino-6-methylthio-1,3,5-triazine derivatives, o-phenylphenol, substituted ureas and phenylureas, phthalimide derivatives, iodocarbamate, pyrethroids, chloroacetamide, sodium borate, methylisopropylphenol, barium metaborate, and dithiocarbamates.

40. The curable mineral construction product of claim 34, wherein the biocide consists of one or more biocides selected from the group consisting of N-octylisothiazolinone, dichloro-N-octylisothiazolinone, chloromethylisothiazolinone, methylisothiazolinone, benzisothiazolinone, 2-(methoxycarbonylamino)benzimidazole, 2,4-diamino-6-methylthio-1,3,5-triazine derivatives, o-phenylphenol, substituted ureas and phenylureas, phthalimide derivatives, iodocarbamate, pyrethroids, chloroacetamide, sodium borate, methylisopropylphenol, barium metaborate, and dithiocarbamates.

41. The construction product of claim 49, wherein at least one film forming polymer comprises a polymer polymerized from one or more monomers selected from the group consisting of vinyl esters, (meth)acrylic esters, vinylaromatics, olefins, 1,3-dienes, vinyl halides, and optionally, further monomers copolymerizable therewith.

42. The construction product of claim 49, wherein at least one film forming polymer comprises a copolymer comprising vinyl acetate and ethylene, a copolymer comprising vinyl acetate, ethylene and a vinyl ester of  $\alpha$ -branched monocarboxylic acids having from 9 to 11 carbon atoms, or a copolymer comprising styrene and one or more of methyl acrylate, ethyl acrylate, propyl acrylate, n-butyl acrylate, or 2-ethylhexyl acrylate.

43. A process for increasing the resistance of a cured mineral building product to microbial growth, comprising adding to a curable mineral building product composition, a water redispersible polymer powder composition containing at least one spray dried water redispersible polymer powder admixed with at least one solid biocidally active additive selected from the group consisting of bactericide active(s), fungicide active(s), and algicide active(s).

44. The process of claim 43, wherein the redispersible polymer powder composition is prepared by spray drying an aqueous polymer dispersion and a biocide.

45. The process of claim 44, wherein at least one biocide consists of at least one isothiazolinone or benzimidazole.

46. The process of claim 45, wherein the biocide consists of one or more biocides selected from the group consisting of N-octylisothiazolinone, dichloro-N-octylisothiazolinone, chloromethylisothiazolinone, methylisothiazolinone,

benzothiazolinone, 2-(methoxycarbonylamino)benzimidazole, 2,4- diamino-6-methylthio-1,3,5-triazine derivatives, o-phenylphenol, substituted ureas and phenylureas, phthalimide derivatives, iodocarbamate, pyrethroids, chloroacetamide, sodium borate, methylisopropylphenol, barium metaborate, and dithiocarbamates.

47. A process for the preparation of a curable, biocide-containing mineral building material of claim 49, comprising admixing

- a) one or more mineral building composition components;
- b) water; and
- c) a redispersible polymer powder composition comprising at least one film forming redispersible polymer powder and a biocidal additive of at least one biocide, said biocidal component present in an amount of from 0.001 to 0.5 weight percent based on the weight of the redispersible polymer powder composition.

48. The process of claim 47, wherein the biocide consists of one or more of an isothiazolinone or benzimidazole, which is incorporated into the water redispersible polymer composition by spray drying an aqueous polymer dispersion and a biocide.

49. A curable mineral construction product comprising a water-redispersible polymer powder composition, said redispersible polymer powder composition comprising a

water redispersible polymer powder and at least one biocidal additive selected from the group consisting of bactericide active(s), fungicide active(s), and algicide active(s), the biologically active additive being present in the water redispersible polymer powder composition in an amount of 0.001 to 0.5 percent by weight based on the weight of the water redispersible polymer powder composition.

50. The curable mineral construction product of claim 49, wherein the polymer of the redispersible polymer powder is a vinyl acetate, vinyl versatate and ethylene copolymer, and the biocide is a solid biocide consisting of N-octylisothiazolinone.

51. The curable mineral construction product of claim 34, wherein the polymer of the redispersible polymer powder is a vinyl acetate, vinyl versatate and ethylene copolymer, and the biocide is a solid biocide consisting of N-octylisothiazolinone.

## **IX. EVIDENCE APPENDIX**

1. Declaration of Dr. Hans-Peter Weitzel.



**X. RELATED PROCEEDINGS APPENDIX**

None.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

HANS PETER WEITZEL, et al.

Group Art Unit: 1796

Examiner: Alexander C. Kollias

Serial No.: 10/596,266

Filed: June 7, 2006

For: USE OF BIOCIDES-CONTAINING, WATER-REDISPERSIBLE  
POLYMER POWDER COMPOSITIONS IN MINERAL  
CONSTRUCTION MATERIALS

Attorney Docket No.: WAS 0768 PUSA

**DECLARATION OF DR. HANS PETER WEITZEL  
UNDER RULE 132**

Commissioner for Patents  
United States Patent and Trademark Office  
Washington, D.C. 20231

Sir:

I, Dr. Hans Peter Weitzel, do hereby declare and state as follows.

1. I am a co-inventor of the subject matter disclosed and claimed in U.S. application Serial No. 10/596,266, am familiar with the content of the application, the claims, the Office Action of June 12, 2009, and the references cited by the Patent Office.

2. The claimed invention incorporates biocidal actives in their "native" or "neat" form into redispersible polymer powder compositions. This incorporation is preferably achieved by spray drying an aqueous polymer dispersion also containing dispersed active.

3. The Weitzel published application 2003/0018121 A1 and the patent which issued therefrom, U.S. 6,740,692, does not disclose, teach, or suggest the claimed invention. The published application and patent (hereinafter, collectively, "*Weitzel*"), requires the use of cyclodextrin complexes of biocide(s), and directs the skilled artisan away from direct biocide incorporation into a redispersible polymer powder composition.

4. We have surprisingly and unexpectedly discovered that direct incorporation into the redispersible polymer powder composition is much more effective than when a biocide is directly added to a cementitious formulation as has been practiced for years to prevent microbial growth. This is shown by the inventive examples and comparative examples in the specification. The amounts of biocide added to the mineral building product formulations in the comparative examples are within the range commonly used by those skilled in the art to prevent microbial growth, amounts 10 to 20 times the amount of active used in the inventive examples. Yet, despite this much larger amount of biocide, microbial growth was observed after 9 months of exposure, where no microbial growth was observed for the subject invention examples, even after 12 months.

5. If less biocide had been used in the comparative example, greater microbial growth would have occurred. At the level used in the inventive examples, 10 to 20 times less than used in Comparative Example 4, the results would have been far worse if the biocide were added directly to the cement mixture. It is well known in the industry that much lower levels of biocides than used in Comparative Example 4 are ineffective in preventing microbial growth. There is no need for a "side-by-side" comparison, as termed by the Patent Examiner, since all skilled in the art know what the result would be.

6. The claims require that at least one biocidal additive "consist of" a bactericidal active, a fungicidal active, or an algicidal active. This corresponds to the written description of the invention in the specification, and is the method used in the inventive examples.

The term "active" as used in the art refers to the active ingredient itself. For example, a cyclodextrin/fungicide complex as disclosed by *Weitzel* is not an "active". The "active" is the fungicide, not its cyclodextrin complex. While the cyclodextrin complex may have biocidal activity, it is not the "active". The fungicide itself is the "active". This is how one skilled in the art views this term. By the same token, the encapsulated biocides of *Botts* for his totally different and irrelevant use in the field of agriculture, are not "actives". They are encapsulated "actives". The claims require that the additives "consist of" the actives, thus precluding complexed or encapsulated biocides. Of course, the latter may be added to the

formulation, but only as a separate, optional ingredient, which is not preferred due both to the expense of preparing complexed or encapsulated biocides, as well as to the fact that the claimed compositions containing uncomplexed and non-encapsulated biocides have proven so surprisingly and unexpectedly effective that no additional biocide is required, in any form.

7. We prepared additional redispersible polymer powder compositions containing biocide, in accordance with the claimed invention. These examples are set forth below as Examples 5-7:

Example 5:

A polyvinyl alcohol-stabilized dispersion of a copolymer of vinyl acetate and ethylene having a glass transition temperature of  $-7^{\circ}\text{C}$  is admixed with 10 parts (solid/solid) of a polyvinyl alcohol having a degree of hydrolysis of 88 mol% and a Höppler viscosity of 4 mPas and adjusted to a solids content of 35%. N-Octylisothiazolinone (in the form of Acticide OTW) is added to this dispersion in an amount corresponding to an active compound content of 750 ppm based on powder and the dispersion is spray dried.

Example 6:

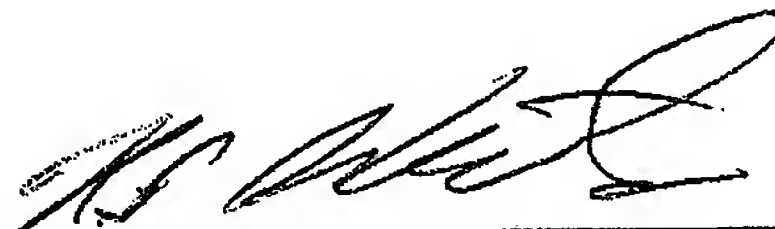
A polyvinyl alcohol-stabilized dispersion of a copolymer of vinyl chloride, vinyl laurate, and ethylene having a glass transition temperature of  $+1^{\circ}\text{C}$  is admixed with 10 parts (solid/solid) of a polyvinyl alcohol having a degree of hydrolysis of 88 mol% and a Höppler viscosity of 4 mPas and adjusted to a solids content of 35%. N-Octylisothiazolinone (in the form of Acticide OTW) is added to this dispersion in an amount corresponding to an active compound content of 750 ppm based on powder and the dispersion is spray dried.

Example 7:

A polyvinyl alcohol-stabilized dispersion of a homopolymer of vinyl acetate having a glass transition temperature of  $+30^{\circ}\text{C}$  is admixed with 10 parts (solid/solid) of a polyvinyl alcohol having a degree of hydrolysis of 88 mol% and a Höppler viscosity of 4 mPas and adjusted to a solids content of 35%. N-Octylisothiazolinone (in the form of Acticide OTW) is added to this dispersion in an amount corresponding to an active compound content of 750 ppm based on powder and the dispersion is spray dried.

In these redispersible polymer powder compositions, microbial growth is eliminated to the same extent as in the subject invention examples in the specification. The actual redispersible polymer powder itself makes no difference to the effectiveness of the claimed compositions, as the polymer powder *per se* does not have any biocidal effect. Therefore, any redispersible polymer powder composition within the scope of the claims will exhibit similar properties with respect to microbial growth.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.



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Dr. Hans Peter Weitzel

Dated: 08.09.2009